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ABSTRACT

The conventional concept of educational efficiency, adapted from the technical-industrial sector, is inappropriate for public schools. In the technical industrial sector, there is widespread agreement about the desired outcome: profit. Yet there is very little public agreement about the proper goals of schooling. Even if agreement on goals could be achieved, techniques for measuring school outcomes are primitive and imprecise. There is also little agreement about what is the best educational process. Finally, it is difficult to measure school efficiency since the influence of outside environmental and socioeconomic factors on achievement is so significant. It would be more useful to substitute "institutional responsiveness" as the measure of educational efficiency. This goal could then be pursued through greater practical reliance on political processes and the market mechanism, such as in an educational voucher system. In the face of so many unknown factors about educational efficiency, it might be best to allow educational consumers to choose schools that embody their own definitions of efficiency and concentrate on their own preferred educational goals. As a complement to such a system, new personnel incentives would also enhance school efficiency. (Author/JM)

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OCCASIONAL PAPER #18

ALTERNATIVE CONCEPTS OF SCHOOL EFFICIENCY

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SUMMARY

This paper contends that the conventional concept of efficiency, adapted from the technical-industrial environment prevailing in the private sector, is presently inappropriate for public schools. It would be more useful to substitute "institutional responsiveness" as the measure of efficiency in the public sector and pursue this goal through greater practical reliance upon political processes and the market mechanism. In addition the paper presents suggestions for enhancing school efficiency by altering existing school system personnel incentives.

ALTERNATIVE CONCEPTS OF SCHOOL EFFICIENCY

There is little wonder why public officials increasingly pursue the topic of school efficiency. Average school expenditures for the nation have risen fifteen-fold from their 1940 level of $100 per pupil. Even discounting for inflation, this represents an approximate 500 percent increase. Throughout most of the 1960's and 70's public education expenditures increased at annual rates in excess of the percentage growth in Gross National Product.[1] Until the mid 1970's, teacher salaries were higher than the compensation for other occupations requiring comparable training. Moreover, despite skyrocketing resource increases, by conventional measures of school output, pupils' test scores, the output of schools had stabilized or declined.

Beginning in the late 1960's a coalition of political and economic forces began to promote greater public school "accountability." This constituted the third historical instance in America's cyclical concern for greater public school efficiency. The first major school efficiency movement occurred in the middle of the nineteenth century.[2] The period was marked by rapid population expansion and the inauguration of widescale public schooling in cities. The efficiency movement consisted of adopting a

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1 U.S. Office of Education, A Century of Public School Statistics, U.S. Government Printing Office, 1973.

2 David B. Tyack, The One Best System (Cambridge: Harvard University Press, (1975).

number of European pioneered techniques for maximizing the instructional time of school masters who were otherwise in short supply. A half-century later, the cycle repeated itself with an effort to promote greater scientific management of schools by widespread deployment of professional educational administrators.[3]

These two historical efforts to achieve added school productivity, borrowed heavily from the burgeoning manufacturing and industrial techniques of their time. Similarly, the current accountability movement in education attempts to draw upon the management. Terms such as Management by Objectives (MBO), Program, Evaluation Review Techniques (PERT), and Program Performance Budgeting (PPB), are almost as common in conversation among school administrators as among industrial mangers.[4] Today, as in the past, those concerned with enhancing efficiency in educational organizations turn readily to the most widely publicized examples, the technical-industrial model of productivity.

Will the third time prove successful for education? Not likely. The probability is good that the contemporary accountability movement will follow the path of previous educational fads, a dramatic surge of interest and publicity only to subside into a shallow period of practical implementation. The primary impedi-

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3 Raymond E. Callahan-The Cult of Efficiency (Chicago: University of Chicago Press, 1963).

4 For a description of the contemporary accountability movement, see Edward Wynne, The Politics of School Accountability (Berkeley: McCutchan, 1972). The leading proponent of "accountability" is Leon Lessinger. For detail, see his Accountability: Systems Planning in Education (Hon wood: Etc Publishers, 1973).

ment to current efficiency efforts is not, as cynics might assert, total recalcitrance or incompetence on the part of educators and school managers. Rather, as we contend in the following section of this paper, the difficulty is in the inability of the education process presently to meet the assumptions inherent in the technical-industrial model of school productivity. Until there exists a science of instruction far more complete and precise than is currently the case the prevailing concept of accountability is doomed to failure.[5] Indeed, it may even be detrimental to the effort to enhance school efficiency.

As we argue in subsequent sections, the current state of the education art renders schooling more amenable to gains in productivity if one or a combination of several alternative efficiency concepts were adopted. In this regard, we will discuss three other strategies for enhancing school efficiency, alternative models which stress (1) a political definition of efficiency, (2) the injection of a larger measure of the market mechanism, and (3) a vastly modified personnel incentive system.[6]

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5 This contention is argued in detail in James W. Guthrie "Social Science Accountability and the Political Economy of Public Schools," in John E. McDermott (ed.) Indeterminancy in Education (Berkeley: McCutchan, 1976).

6 These alternatives are analyzed in detail in Walter I. Garms, James W. Guthrie, and Lawrence C. Pierce, School Finance: The Politics and Economics of Public Schools (Englewood Cliffs: Prentice-Hall, in press).

The Conventional School Efficiency Model and Its Weaknesses

The industrial revolution resulted from the fortuitious convergence of practical political ideologies and production technologies. The Protestant Reformation, subsequently developed political philosophies such as John Stuart Mills' "Liberterianism," and the acceptance of "Social Darwinism" provided cultural justification for profit seeking and market competition. Scientific developments such as steam motive power, interchangeable parts, and assembly line techniques combined with specialization of labor to encourage an expanded and more efficient production of material goods. In that private enterprise offered high personal gain to risk taking entrepreneurs and those able to contribute advanced techniques and advice, it attracted a substantial proportion of western civilization's human talent. There existed powerful incentives for inventors, technicians, and scientists to make the production process ever more efficient. Over time, at least when judged in strict economic terms, the manufacturing sector made extraordinary advances in productivity and, understandably, became for many the model against which to judge all enterprise, both private and public. The difficulty is that public schools, past as well as present, are not sufficiently analagous in purpose or process to permit the technical-industrial model to be useful in obtaining greater educational efficiency.

TECHNICAL-INDUSTRIAL EFFICIENCY ASSUMPTIONS

Private sector endeavors, particularly manufacturing firms, generally exhibit five conditions which are not immediately similar for schools. First, in the private sector, there is almost unanimous agreement upon the desired outcome, make a profit. There exists little conflict regarding the overall purpose of the organization, the basic intent is to make money. Second, means for measuirng the firm's success or failure are relatively straightforward, a financial balance sheet specifying profit in its various forms, high net sales proceeds, capital gains or dividends. Third, private sector undertakings possess a basic technology which guides production. Whether refining oil, producing motor vehicles, or manufacturing electronic devices. equipment and procedures exists for converting raw materials into finished products. These production processes are grounded in well known scientific principles. Fourth, within reasonable boundaries, private forms are aware of and usually can exercise control over the qualities of raw materials used in production. Lastly, the profit motive, when coupled with competition, motivates private sector organizations to attempt to comply with consumers' preferences.

To varying degrees, America's public schools do not exhibit these five characteristics. There is not widespread and intense public agreement regarding the objective of schooling. Techniques for measuring school outcomes are primitive and imprecise. There is little scientifically derived knowledge regarding the

best way to instruct in any particular subject. Schools have almost no control over the quality of "raw material," students, with which they must work. The monopolistic nature of public schools erodes substantially the incentives for schools to respond to the tastes of clients, students and their parents. We explain each of these omissions in greater detail in the sections which follow.

DISAGREEMENT OVER THE GOALS OF SCHOOLING

The goals of schooling have been a topic for philosophic consideration and practical conversation for literally thousands of years,[7] but the amount of time given to the problem has not resulted in a resolution. Only under the most autocratic national systems of education is there ever a clear pronunciation on the ends to which schooling should be directed. To be sure, even in a complicated and overlapping set of school jurisdictions such as we have in the United States, there can be a modicum of agreement on the purposes of schooling. However, such a consensus, at least when it is stated publicly, is generally so abstract as to be vapid.

For example, most citizens concur that schools should strive to teach basic reading, writing, and counting skills, good citizenship, tolerance of fellow citizens, good habits of health and safety, occupational training, patriotism, life adjustment, physi-

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[7] Los Angeles Unified School District, "Report of the District Goals Review Committee." Memeo. October 22, 1974, ii.

cal fitness, and on and on. The difficulty comes when efforts are made to arrive at priorities among these goals or when the objectives are made specific. How much effort should be given to teaching youngsters patriotism? Is this best done by teaching "critical thinking," which might very well result in students questioning national endeavors such as military action in Viet Nam? Or, should students, particularly at an early age, simply be taught "My country, right or wrong"? Perhaps students should be steeped more intensely in health and personal hygiene. After all, what could be more important than understanding how one's body functions, the requirements of basic nutrition, and the dangers of substances such as alcohol, tabacco, and addictive drugs? Yet again, it can be argued that America is not facing a crisis of patriotism and health anywhere near the degree to which it is experiencing a complete moral breakdown. Crime, divorce, child abuse, refusal to work, personal dishonesty, and government scandal all abound. This line of thought would have schools stress personal values, virtue, and strong discipline.

The argument over educational priorities and objectives takes place at every level of government.[8] Local and state statutes and federal government educational provisions are filled with confusing and conflicting rhetoric regarding the purposes of schooling. For example, it has been virtually impossible to determine if the Elementary and Secondary Education Act (ESEA) is a success or failure because nowhere is it clear what the act

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[8] Fleischmann Report on the Quality, Cost, and Financing of Elementary and Secondary Education in New York State, Vol. III (New York: The Viking Press, 1973)

was supposed to accomplish. Is it intended to enrich the alleged cultural improverishment of low-income children, teach them to read and count as well as their middle-class counterparts, or subsequently ameliorate their depressing rate of unemployment?

Disagreement over the purposes of schooling has been widespread from the first days of our republic and has increased as immigration patterns and geographic expansion began to forge a pluralist value system.[9] Moreover, our present period of life-style transition, religious relativism, and increased secularism are not likely to evoke cultural homogeneity and value harmony in the near future.

ABSENCE OF A MEASUREMENT TECHNOLOGY

If by some miracle there is significant agreement on what schools are expected to accomplish, the overwhelming problems of assessing school effectiveness still remain. One reason for this is the primitive state of educational measurement. What is particularly disheartening in this regard is that testing probably has attracted more sustained research by better brains than any sphere of schooling. Scholars in this field are consistently among the brightest and best trained in all of educational research. However, it is very difficult to attract psychologists away from their historic concerns for research about individuals

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[9] Governor's Citizens' Committee on Education, Improving Education in Florida (Tallahassee, Fla.: Office of the Governor, 1973.)

and thereafter to induce them to cooperate with economists, sociologists, and politicians to resolve the thorny problems of finding an acceptable means for measuring school output. Space does not permit a detailed explanation of all such measurement problems, but several of the more significant ones are described below.

Normative Testing.[10] The emphasis in standardized testing has been on the development of predictive instruments, which make it possible to rate an individual taking the test in relation to others who have previously been examined on the same test. He scored "at the 90th percentile," "at the median," or "in the bottom quartile." These are all normative statements that illustrate the dominant testing technology. These statements do not provide substantive information on what the test taker knows, how many questions he or she answered correctly, or whether or not the individual is qualified or competent on the substantive dimension being assessed. However, it does provide a ranking that frequently has powerful predictive validity. Literally millions of academic and employment decisions have been based on this kind of testing. Many colleges utilize the Scholastic Aptitude Test (SAT) in determining admission eligibility. Graduate schools of all kinds use a higher powered version, the Graduate Record Examination (GRE), for admission purposes. The military has long used the Armed Forces Qualification Test (AFQT). Government agencies

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10 Allan C. Ornstein, Race and Politics in School-Community Organizations (Pacific Palisades, Calif.: Goodyear Pub. Co., 1974

and private firms administer tests to winnow the pool of job applicants, and school districts frequently use the National Teacher Examination (NTE) to assess the qualifications of potential employees.

Despite widespread popular acceptance and use, norm-referenced tests do not accurately assess school effectiveness because of the manner in which the tests are constructed. In assembling "good" test questions it becomes crucial to identify items that discriminate or separate examinees and distribute them over a range of correct answers. If all examinees made the same score, the test would be useless for predicting performance on some subsequent task; it would not permit discriminating judgments to be made. Thus, a norm-referenced test maker discards easy questions--those which are frequently answered correctly. Similarly, items to which no one can respond correctly are omitted.

Through repeated rounds of use, test items are continually purified in terms of their ability to discriminate among examinees. Even though norm-referenced tests are intended to measure a form of academic achievement, in time these examinations become much like IQ tests, filled with a number of abstractions. In this form, a standardized test published by a national testing company may contain very different items from what a classroom teacher has been attempting to convey to his or her pupils.

Interpreting the Metrics of Learning. A related social science weakness concerns measurement yardsticks or the scale or metric applied to measure how much gain or loss a student or group of students has experienced over a given period of time. This is

an agonizing technical problem that probably is better understood by illustration. An ideal test instrument would be based on a set of evenly-spaced linear increments For example, on a test composed of 100 questions, we would know that a student receiving a raw score of 75 was better informed regarding the subject matter at hand than a student who scored 25, and also that the former knew the subject matter three times better than the latter. However, such assumptions regarding linearity and systematic value of higher scores are implausible because of the construction of current norm-referenced tests. All that can be deduced from a norm-referenced test score is that the individual student in question scored higher, or lower, than most students.

The concept of grade equivalency scores is intended to impute greater meaning to norm-referenced testing. For example, a student scoring at the 4.5 grade level answered enough test items correctly to match the number typically answered correctly by youngsters in the fifth month (January) of the fourth grade. (The school year for grade equivalency reporting purposes is 10 months in length.) If the student is in fact in the second month of the third grade, then we know that he or she is testing as high as the average student in the middle of the fourth grade.

In another example, if a second-grade student scores 2.1 on a reading comprehension test in September and scores 4.5 in the spring of the same school year, we would know that he or she had learned substantially more than would normally be expected of a student in a school year. We could then say that the student, the teacher, the home, or all three, had performed well. Indeed,

if all students or a major proportion of students in a class, school, or school district had made such gains, we would judge the situation very productive.

However, the grade equivalency statements are often deceptive. For example, frequently a gain of one month on a test score means that the student correctly answered only two or three more test items than the norm. In a reading comprehension test, this may mean correctly answering two or three vocabulary items. Who honestly believes that knowing a few more vocabulary words ranks a student a month ahead of this or her academic peers? At present, we can not be sure that our test instruments are of sufficient precision to permit such inferences. However, the grade equivalency mechanism provides the illusion of great specificity, and laymen and professional educators will undoubedly continue to rely on the device because it provides a medium of understanding that otherwise is absent. However, consumers of school productivity sutdies should realize that such a metric is at best a slender reed upon which to base policy judgments.[11]

Problems With Process

In the absence of agreement on the product of schooling or how to measure it, concern for school efficiency and effectiveness has sometimes concentrated on process. The rationale is that there must exist a body of "best practices" that, if uncovered, would

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[11] See Melvin Zimet, Decentralization and School Effectiveness (New York: Teachers College Press, 1973).

increase school effectiveness. Generally, the search for successful school practices focuses on the teacher. Regrettably, however, there has never been a definitive study of what constitutes an effective repertoire of instructional behaviors. Even the relatively unsophisticated scientific step of recording how good teachers act in the classroom has never taken place.

In the early days of scientific medical practice, physicians' descriptions of successful clinical procedures were published in medical journals. The authors never claimed to have performed thousands of such operations or to have treated a representative sample of patients by the new procedure. Rather, they simply recorded what they had done and why they thought it was effective. By implication, other physicians were invited to add their findings to the pool of practical knowledge. Indeed, this reporting procedure still takes place and is a useful contribution to improving modern health practices. It is not a replacement for, but a useful adjunct to, large-scale, scientific laboratory research. Similarly, if teachers had conducted "clinical" classroom research beginning a half century ago, today we might have a knowledge base of teacher behavior. Regrettably, such a base does not presently exist. Moreover, until teacher training institutions, school districts, and other related agencies begin to train teachers in the methods of clinical research and provide them with the setting and incentives to conduct studies, we will never be able to take advantage of the natural experiments and potential research studies in America's classrooms. Further, teachers will continue to miss an image as professionals interested in improv-

ing their skills and adding to a scientific body of knowledge and practice.

Social scientists have fared little better than professional teachers in their efforts to determine effective teaching practices. Social science research, most of it conducted in the 1960's, almost totally excluded teacher behavior from consideration. For example, the renowned Coleman Report[12] contained no measures of teacher behavior. The Report employed what researchers label "status" variables rather than process measures. The Coleman team collected information regarding teachers' age, years of experience, and level of education. One can construct a hypothetical argument as to how such measures might be reflected in the behavior of teachers, and thus they may be important dimensions upon which to collect data. However, presumably, if a teacher has an effect on student learning, it is through the teacher's action. Thus, the important variable should be teacher behavior, measures of instructional processes, or teacher-student interaction.

Coleman Report findings are subject to debate on several grounds. However, the inability of his competent team to capture the essence of schooling-teacher behavior-dramatically illustrates the present impotence of social science in assessing school effectiveness. Moreover, until techniques for observing, recording, and analyzing teacher behavior improve, future prospects for

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12 Preston R. Wilcox, "The Controversy Over IS 201: One View and a Proposal," The Urban Review 1 (No. 3, 1966).

gaining additional knowledge are dismal.

INABILITY TO CONTROL FOR THE "OUTSIDE"

Evaluation schemes displaying even a modicum of sophistication attempt to take account of the fact that much of what a child is able to learn is beyond the ability of schools to control. For example, though no one is absolutely sure how important it is, it generally is conceded that human beings vary with regard to their genetically endowed learning capacity. Presumably, this innate intellectual capacity is established at the child's conception and is a learning factor beyond the ability of schools to manipulate. Similarly, there probably is no stronger social science finding than the relationship between school achievement and the student's family and neighborhood environment. Yet, with a few exceptions, educators cannot arrange for a home environment that motivates children to learn or provides them with the necessary experiences to benefit from schooling.

Researchers have devised several means to take such out-of-school influences on learning into account. However, these measures are woefully inadequate. Genetically endowed intelligence is almost impossible to measure accurately. Even psychologists readily admit that they do not know what IQ tests measure. These tests depend on a child manipulating physical materials or responding to pencil and paper tests. Yet, the ability to understand questions is affected not only by one's innate intelligence

but also by one's environmental experiences. Frequently, the environment includes school. At present it is impossible to obtain a measure of intelligence untarnished by environment. Thus, IQ scores may be highly confounded. The outcome is that it is difficult to impossible to control for innate ability in a school effectiveness effort.

Controlling for a child's social environment outside of school is equally frustrating. The typical procedure here is to find measures that purport to capture the essence of a child's social circumstance, and then apply statistical controls for them. However, proxies for children's social background are almost always incomplete or flawed. The measures frequently used are parents' occupation, education, and income. Sometimes these are supplemented by an index of possessions in the home and a judgment as to the financial value of the home itself. In some instances these data are gathered directly from the student or parents. More frequently, they are pieces of information averaged for census tracts. Sometimes, student social background data are simply the best judgements of observers or a school principal. Even when such pieces of information are correctly gathered, they tend to be but fragmentary indicators of a child's social circumstances. If a well educated, financially comfortable home almost always provided emotional succor and intellectual stimulation, whereas economically and academically improverished parents inevitably produced poor scholars, we might have more faith in superficial social measures. However, the exceptions to such simple scenarios are legion. Sufficient numbers of children

deviate from the statistical norm with regard to these background proxies, that one almost inevitably concludes that, at best, they are of limited validity and, at worst, may be useless.[13] The situation is summed up succinctly by a RAND corporation researcher who wrote:

> Evaluations that use imperfect information run into both analytical and political problems. Educational accountability systems based on achievement scores are an instance. Such systems frequently turn out to be irrelevant to policy decisions, resisted by educational groups that fear unflattering comparisons and the misuse of results, and infeasible given faulty data and limited time and money.
>
> Accountability systems in state governments are increasingly widespread, and state governments seem to be more and more important as educational policymakers. In the state I rename Fulano, accountability ran into political opposition and feasibility constraints which are instructive to examine. Policymakers consistently and mistakenly saw important statistical issues as merely 'technical' questions. Actually, these statistical issues were at the heart of more relevance, less resistance, and greater feasibility.[14]

Upside Down Incentives

Even though it is seldom altogether clear what it is that schools are supposed to teach, there is general public agreement that instructing pupils is the primary function of schooling.

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13 Los Angeles Unified School District, Educational Renewal: A Decentralization Proposal for the Los Angeles Unified School District (Los Angeles: The District, 1971) 26-27.

14 James D. Thompson, Organizations in Action (New York: McGraw Hill, Inc., 1967). For an insightful elaboration of Thompson's approach, and an example of its application in the context of school decentralization, see Mary T. Moore, "The Boundary-Spanning Role of the Urban School Principal," unpublished Ph.D. dissertation, School of Education, University of California, Los Angeles, 1975.

However, like most any private sector undertaking, the personnel incentive system in public schools does not reward employees for performing this function. Indeed, the institutions' incentive ladder is structured in almost precisely an antithetical manner, the less one teachers, the greater the rewards.

At least in part because of problems we have previously described, lack of agreement about expected outcomes, imprecise measurement, absence of an instructional technology, and inability to control "raw materils," schooling is extraordinarily labor intensive and teachers remain a highly undifferentiated work force. One teacher's job is substantially similar to another's and their pay is far more a function of job seniority than ability, training, or competence. In most U.S. school districts teacher pay has little to do with whether or not you strive to be a good classroom instructor. Indeed, even if you are an inadequate teacher, the likelihood of your being penalized is slender. Teachers are protected not only by tenure, a mechanism justified for purposes of protecting academic freedom, but also by elaborate statutory and case law regulations which have recast the mantle of "due process" into a protective shield for the incompetent.

The absence of an effective personnel incentive system results in an inability of the public school institution to be sensitive to public preferences. This situation in the private sector might have serious negative effects upon profits. However, the virtual monopoly of the U.S. public school system insulates employees from the consequences of consumer dissatisfaction. The market for their services is relatively assured for public school

professionals.

If the existing incentive system were simply neutral in inducing school employees to teach, the situation might be more tolerable. However, it is probable that the reward system actually induces many able individuals to leave classroom instruction. There exists an employment hierarchy which frequently motivates capable employees to attempt to become demonstration teachers, instructional specialists, counselors, deans, vice principals, principals, central office administrators, and county and state level school officials. Each of these steps places greater distance between the individual and the day-to-day purpose of schools, teaching youngsters. Also, each of these positions provides greater rewards, more pay, more time with adults more discretion over one's time, and more public prestige. Given such an upside down incentive system, it is little wonder that schools are inefficient.

Dysfunctional Consequences of Technical-Industrial Accountability

Efforts in the private sector to enhance efficiency led to development of complicated mathematic models of manufacturing which enable analysts to appraise the benefits of alternative production processes and materials. This analytic technique is known as production function analysis. Beginning in the latter part of the 1960's, efforts were made to employ this scheme to achieve "accountability" for schools. When adapted for educational purposes, the technique takes the form of the following

generalized equation:

$$A_{it} = gf_{i(t)}, S_{i(t)}, P_{i(t)}, I_{i(t)} \quad it$$

A_{it} = a vector of educational outcomes for the ith student at time t.

F_{it} = a vector of individual and family background characteristics cumulative to time t.

$S_{i(t)}$ = a vector of school inputs relevant to the ith student cumulative to t.

$P_{i(t)}$ = a vector of peer or fellow student characteristics cumulative to t.

$O_{i(t)}$ = a vector of other external influences (the community, for example) relevant to the ith student cumulative to t.

I_{it} = a vector or initial or innate endowments of the ith student at t.

Production function analysis illustrates the technical-industrial efficiency model in what may be its most sophisticated form. Even so, it fails adequately to compensate for the assumption deficiencies we have previously described. Indeed, among the first to realize this condition and warn against the danger of continued use for policy purposes, is the economist Henry Levin, who wrote the following in 1974:

> the lack of similarities among the production techniques used by different schools may mean that neither average nor frontier findings can be applied to any particular school. Indeed, in the extreme case, each individual school is on its own production function (which varies according to the outputs being pursued), and evaluation results for any group of schools will not be applicable to individual schools in the sample.

> While measurement of educational production may be a useful exercise in itself, it is not clear that such studies can help us to improve the efficiency of the educational sector. In particular, our focus on a single and measurable output, student achievement, not only limits the analysis considerably; but it may provide policy recommendations that would reduce the economic efficiency of the educational industry if they were adopted. Perhaps the only generalization that one can make from this pessimistic overview is that the analysis of production of public activities is fraught with difficulties that are unusually severe given the present analytical state of the art. The implications of estimates of public sector production functions for improving social efficiency should probably be stated with far greater modesty than they have been. They may be totally misleading.[15]

Because the technical model is conceptually and practically unsound, it fails to correct the ills for which it is intended. It does not (1) offer a sound system of incentives for professional educators, (2) provide consumers with information they can use in choosing school services; (3) deliver useful feedback either to educators or to laymen as to how well schools are working; (4) provide a framework in which to conduct research and effectiveness studies to improve school services; (5) offer any basis to decide which teachers and administrators are effective and which are incompetent; and (6) provide clues as to where added financial resources should be spent. The list of failures extends on and on.

The inability of the technical accountability model to achieve the expectations held for it is provoking a number of counterproductive consequences. Professional educators, largely reacting to the inadequacies and inequities foisted on them by

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[15] Preston R. Wilcox, "The Controversey Over IS 201: One View and a Proposal," The Urban Review 1 (No. 3, 1966), 12-16.

today's accountability efforts, are increasingly resisting any evaluation attempts. One typical argumnet is: "Standardized tests do not accurately measure what a child has learned in school. The child's home environment has been shown to be the prime determinant of school achievement, and we have no control over that situation. In the absence of any science that prescribes how to teach children, how can we be evaluated for our instruction?" These justifications, like most human rationalizations, are partly accurate, and the present accountability does little to blunt their validity. Indeed, it aggravates weaknesses and in so doing provokes professional educators to resist evaluation more fully.

Another possible dysfunctional consequence of the present accountability system's failure is an even greater skepticism about education among legislators and other public officials. Because the technical model is not providing needed information, education is becoming increasingly vulnerable to simple political arguments. Its once privileged access to finances is jeopardized. Schools increasingly must compete with other public sector services for resources and the absence of performance data or cost effectiveness information hurts their cause.

In short, from the policymakers' viewpoint, public education gives the impression of being out of control. If the situation is not rectified, the possible outcomes are intervention and further diminution of professional autonomy, greater erosion of public confidence and consequent reduction in financial support, and a general undermining of this nation's long commitment to a

high quality system of public education.

What to do When There Are Few Answers

What can be done to increase an institution's efficiency when neither its purpose nor its processes easily lend themselves to evaluation. There are several solutions to such problems of indeterminancy; however, they have seldom been applied in education. These solutions are varied, some relying upon individual efforts others necessitating collective actions. They can be applied either singularly or in combination. Whatever their precise form, they entail a reformulation of the concept of efficiency when applied to schools. These models assume that responsiveness is a more appropriate definition of efficiency than profit when considering the public sector.

The solution to the problems of indeterminacy is a seemingly anthithetical combination of conditions. The evaluation system must permit complicated, subjective, and even illogical judgments, and simultaneously, communicate them within an agreed upon, standardized and equitable format. There are at least two systems which encompass such conflicting conditions; one is the political process and the other is the market mechanism. Each depends upon innumerable subjective judgments and disaggregated individual actions, but channels the expression of such assessments in a fashion which enhances institutional responsiveness. Each concept and the manner in which it could be adapted to enhance public

school efficiency is explained in detail in other settings.[16] Consequently we provide only a summary description of the alternative models in the following sections. Also, we suggest a third set of reforms intended to redress the inverted personnel incentive system to which we referred earlier.

POLITICS AND SCHOOL RESPONSIVENESS

If institutional responsiveness is accepted as a measure of efficiency, it can be enhanced by injecting a larger measure of politics into school decision-making. The objective is to devise a representative structure which balances appropriate elements of professional autonomy and academic freedom with lay control over school objectives. Such a balance is difficult to achieve. Forces for reform must overcome both a legacy of historical abuses of school politics and contemporary professional educator resistance to the erosion of their present powerful position.

A century ago, school systems were large in number and small in enrollment. The average number of constituents for each

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16 For an example of the mechanisms by which schools could productively be more politicized, see National Committee for Citizens in Education, Public Testimony on Public Schools (Berkeley: McCutchan, 1975); and the Report of the New York State Commission on the Cost, Quality, and Effectiveness of Elementary and Secondary Education (the so-called Fleischmann Report) (New York: Viking, 1973). For means by wich grater market reliance might be implemented, see Garms, Guthrie, and Pierce, School Finance: The Economics and Politics of Public Education (Englewood Cliffs: Prentice Hall, in press).

elected school official was then 250.[17] (Today, because of the twin phenomena of school district consolidation and population growth, each board member represents in excess of 3,000 constituents.) Under these conditions, face-to-face contact between citizen and elected representative permitted an accurate exchange of personal views. Also, these conditions predated the expansion of professional school administrators. Board members themselves were responsible not only for setting policy but implementing it as well. They hired and fired teachers, purchased instructional materials, and established the curriculum. The conduit for transmitting power between the will of the electorate and the control of the institution was direct and forceful. Under such conditions, schools were responsive.

Whatever the virtues of such direct representation, at the turn of the twentieth century it underwent a dramatic alteration. This occurred as a consequence of reform efforts on the part of "progressives" who viewed the graft and corrpuption which colored school governance at the time as the result of an excess of partisan politics. Particularly in large cities, school board members were accused of accepting contract rebates, practicing patronage for teaching jobs, and otherwise engaging in illegal activities. Reformers believed that insulating education from mainline political processes would result in better schools. Consolidation of of ward school districts into central city boards, separation of school districts from general municipal government, and wide-

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17 For more on this point see James W. Guthrie, Diana Thomason, and Patricia Craig, "The Erosion of Lay Control" in National Committee for Citizens in Education, Public Testimony on Public Schools (Berkeley: McCutchan, 1975).

spread deployment of professional school administrators were seen as steps to correct scandal.[18]

Progressive reforms restored public confidence in big city schools. However, political insulation created a power vacuum which came eventually to be filled by professional educators. Initially, it was school administrators who dominated the decision-making process, intimidating elected board members with their "scientific management ideology," and their frequent admonition to leave practice to the professionals. A half-century later, teacher collective bargaining has altered the actors in the decision-making drama, but the outcome remains substantially the same. The opportunity to render schools responsive to the lay public's preferences remains vastly diluted.

Contemporary Reform Efforts

In the 1960's big city minority group representatives advocated greater political decentralization in order to counter professional educator dominance. This reform effort, frequently labeled "community control" had little direct effect. The movement was emasculated by opponents' frequent references to the political scandals of a previous era. However, community control eventually took root through another medium. By the early 1970's federal aid legislation began to mandate greater citizen participation in school related decisions. A number of states subsequently enacted comparable statutes. These provisions increased

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18 See Joseph M. Cronin, The Control of Urban Schools (New York: The Free Press, 1973).

remarkably the number of lay people formally positioned to influence school decisions.

The long run effectiveness of such mandated district-wide and school-wide advisory committees is arguable. Proponents of such mechanisms contend that it takes time for a reform to demonstrate its effectiveness. They argue that when formerly disenfranchised lay people learn properly to exercise their influence, school personnel will become more responsive to public tastes. Conversely, skeptics contend that parent and citizen "advisory" committees are doomed to perpetual impotence because they hold no formal decision-making authority. In their view, professional educators need only listen to lay "advice," they need never heed it. The result is to deceive the public while retaining reins of power in the hands of professionals.

Whatever the validity of the two positions, a wide variety of mechanisms have been proposed by which greater public participation can reach fruition. A particularly complete set of reforms was implemented in 1972 by the Florida legislature.[19] This plan establishes the individual school as the basic unit of management. The initial assumption is that all important decisions can be made at this level, where clients and professionals interact. The burden of the argument rests with those who would escalate a decision to a higher management level. Each school, "ideally," is provided with a lump sum budget over which it has discretion.

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19 Described in detail in the Report of the Florida Governor's Citizens Committee on Education (Tallahassee, 1972).

Each school is governed by a democratically selected parent advisory council, which has as its primary function, selection and evaluation of the principal. Thereafter, the committee advises with regard to personnel needs, curriculum, etc. Annually, each school produces a performance report containing, among other items, the school's results on statewide student achievement tests.

This plan, whatever its practical limitations, was designed with the intent of protecting professional perogatives while simultaneously permitting lay persons a greater voice in the operation of their childrens' schools. Operating through the instrument of the executive officer, the school principal, the institution becomes more attuned to public preferences. However, by itself the plan does little to render personnel below the level of the principal more sensitive to public demands or more motivated to teach effectively. Under the Florida plan, the public school system still occupies a monopoly position, assured of a student population under almost all circumstances. This condition erodes the motive to reform.

The Market Mechanism and School Responsiveness

Public support of education logically need not mean public provision of school services. Advocates of expanded private sector school offerings contend that a greater degree of competition would benefit individual students particularly and the education sector in general. Competition would, by definition, expand

choice. Consumers, through their individual selection of schools, would express their tastes and puncture the present public school monopoly. The absence of an assured clientele would motivate private providers to meet client preferences or jeopardize their share of the market. Fewer clients would be reflected in decreased revenues. Sufficient revenue reduction would lead to school closure and loss of employment, both for management and staff. Such a risk is presumed to sensitize suppliers to client tastes.

Private schooling is not extensive nationwide; the peak year was 1968 when approximately 14 percent of the school age eligible population attended non-public schools. The overwhelming majority attended sectarian, primarily Catholic, schools. While not the case for the nation, private schooling historically and currently has been prominent in specific regions, particularly the Northeast. In some states, 25 percent of the student body is enrolled in non-public schools. This is also the situation in many large cities where private schooling is popular both with minority group and caucasian families.[20] Even so, proponents contend that existing conditions do not permit the market mechanisms to operate fully. Private school parents frequently are subject to fiscal double jeopardy, paying both tuition and property taxes. Under such circumstances, public schools hold a strong competitive edge and remain unreasonably insensitive to client demands.

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20 National Center for Educational Statistics, The Conditions of Education (Washington, D.C., U.S. Government Printing Office, 1977).

A variety of proposals has been put forth for establishing a competitive education market. The primary mechanism in each instance is a voucher. Voucher plans range in complexity from the simplest of notions, such as espoused by Milton Friedman,[21] to more complicated arrangements which attempt to maximize social values in addition to simple schooling. For example, Jencks describes regulated compensatory vouchers which would render low income or low achieving students more attractive by granting their parents a larger dollar voucher.[22] By prohibiting tuition increments beyond the state provided warrant, such handicapped children would be more "valuable," hence more desirable. Similarly, John E. Coons and his colleagues propose a voucher plan which would equalize the ability of families, regardless of income, to select high quality schooling for their children.[23]

All such plans, complexity aside, render the individual household the basic unit for school decisions. The problems of specifying school objectives and instructional purposes is bypassed by disaggregating such decisions to the lowest level of government, the family unit. By exercising choice, each household, consumer unit, at once expresses preferences regarding quality and tastes and provides clear evaluative feedback to the

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21 Milton Friedman, Capitalism and Freedom (Chicago: University of Chicago Press, 1962).

22 Christopher Jencks, Education Vouchers: A Report on Financing Education by Grants to Parents (Cambridge: Center for the Study of Public Policy, 1970).

23 John E. Coons and Stephen D. Sugarman, Family Choice in Education: A Model State System for Vouchers (University of California, Berkeley: Institute for Governmental Studies, 1971).

educational system. The prime "mechanic" in these systems is the option of exiting if dissatisfied.

Combining "Voice" and "Exit"

In an insightful volume entitled, Exit, Voice and Loyalty,[24] Albert Hirschman assesses the political process relative to the market mechanism. His analysis makes clear that while "voice," politics, can enhance responsiveness in some instances it is not an infallible instrument. This is particularly the case in an monopoly circumstances. Conversely, while "exit," the market mechanism, offers good opportunity to express dissatisfaction it can fail under specified conditions to improve the quality of a product or service. In fact, voice and exit are frequently complimentary; the availability of one option enhancing the effectiveness of the other.

In the provision of schooling, it is possible to combine exit and voice. Garms and his colleague propose a combination plan in substantial detail.[25] Suffice it to mention here that such a proposal involves public sector provision of basic schooling and utilizes a Florida plan for school management. Thereafter, many other educational offerings are privately provided but publicly subsidized, proportionate to income, through a voucher and education stamp mechanism.

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24 Albert O. Hirschman, Exit, Voice, and Loyalty (Cambridge: Harvard University, Press, 1970).

25 Walter I. Garms, James W. Guthrie, and Lawrence C. Pierce, Op. cit.

PERSONNEL INCENTIVES

A voucher plan, particularly if it overcame First Amendment difficulties, would obliterate distinctions between public and private schooling. Under such radical reform, it is conceivable that personnel incentives would be reformulated to correct for the present upside down reward structure. However, as was noted previously, the injection of more political representativeness into school decision making would not by itself solve the personnel incentive problem. Thus, in the absence of far reaching restructuring, policy makers would do well to formulate mid-level personnel incentive reforms. What then can be done?

As with other reform facets, numerous plans have been proposed on this dimension. For example, a study for the Oregon legislature authored by Pierce and his colleagues, describes a teacher hierarchy, advancement through wich depends upon intensive appraisal of instructional ability.[26] This plan advocates financial renumeration in keeping with merit promotions. Also, the plan would reduce the career ladder exiting from the classroom and make it possible for an able instructor to earn an annual salary equal to that of a school principal. Differentials for such functions as counselors, department chairmen, and central office staff, below the level of assistant superintendent would

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26 Lawrence C. Pierce, Walter I. Garms, James W. Guthrie, and Michael W. Kirst, State School Finance Alternatives (Eugene: University of Oregon Press, 1975).

equal a classroom teacher. Such specialized administrative roles may be necessary, but they arguably are no more important than instructing. Consequently, they should not carry greater financial reward.